Objective 8: Problems

You should attempt one difficulty 🛠 challenge, one difficulty 🛠🛠 challenge, and one difficulty 🛠🛠🛠 challenge.

VAT problem

Difficulty: 🛠

Write a program that asks the user for a price of an item. Include a function that returns the VAT for the item. This should be output in the main program.

Conversion problem

Difficulty: 🛠🛠

Write a program that provides a conversion utility, converting from metric to imperial measurements. The list of possible conversions can be presented to the user in a menu.

Each conversion should be a separate subroutine or function to allow the program to be modular and added to later.

Darts problem

Difficulty: 🛠🛠

Darts is a game where the objective is to reach a score of zero starting from 501. A player throws 3 darts and their total from the throw is subtracted from their score. A player has to achieve a score of exactly zero to win the game. A throw that would result in a score below two does not count.

Create a program to allow the user to enter a total from their darts. The program should then subtract this from their current score if the remaining score would be greater than one.
The player should win the game when their score becomes exactly zero.

Pseudocode
1.0 Set the player's score to be 501
2.0 Display the message: New game. Player starts at 501 points.
3.0 Loop while the player's score does not equal zero
3.1 Ask the user to enter the total from 3 darts
3.2 Check if the player's score minus the total is greater than 1
3.2.1 Subtract the total from the player's score
3.2.2 Display the player's new score
3.3 Else check if the player's score minus the total equals 0
3.3.1 Subtract the total from the player's score
3.3.2 Display the message: Player 1 wins the game

Darts problem part 2

Difficulty: 🛠🛠🛠

Allow the player to start a new game when they have won.

Create a two player version of the game where players take it in turns to throw darts and have the total subtracted from their own current score. The player that reaches zero first wins.

Snake eyes problem

Difficulty: 🛠🛠🛠

Write a program that plays the following game:

- Player 1 starts the game by rolling two dice.
- The total is the value of the two dice. E.g. 3 and 4, total = 7
- If a player rolls a single 1 on either die, they lose the running total, it is reset to 0 and play passes to the other player without them having a choice to gamble or bank.
- If a player rolls a double 1, they lose their banked total and running total, both are reset to 0 and play passes to the other player without them having a choice to gamble or bank.
- If a 1 was not thrown on either die, the player has the option to gamble and roll the dice again or to bank the accumulated score.
- If the player gambles, the total from the two dice is added to a running total and the dice are rolled again, creating a new total.
- If a player banks, the running total is added to the banked score and the running total is reset back to 0.
- If a player banks, his turn is over and play passes to the other player.
- The game is won by the first person reaching a banked total of 100 or more.